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16 September 1964

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THE SECOND ALL-UNION CONFERENCE ON THEORETICAL
AND APPLIED MECHANICS (USSR)

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Special Translation

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6 THE SECOND ALL-UNION CONFERENCE ON THEORETICAL
AND APPLIED MECHANICS (USSR) .
(Vtoroy Vsesoyuznyy s'ezd po Teoreticheskoy
i Prikladnoy Mekhanike IN:).

1 Special Translation,
10 by S. V. Kalinin.

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THE SECOND ALL-UNION CONFERENCE ON THEORETICAL
AND APPLIED MECHANICS (USSR)

The following special translation was prepared in response to a request from the HQ R & T Division, AFSC. The article was originally published as follows:

Kalinin, S. V. *Vtoroy ysesoyuznyy s'yezd po teoreticheskoy i prikladnoy mekhanike*. IN: *Moscow universitet. Vestnik, Seriya I: Matematika, mekhanika*, no. 3, 1964, 90-91.

The Second All-Union Conference on Theoretical and Applied Mechanics was held from 29 January to 5 February 1964 at the Moscow State University. This conference was of great interest not only to specialists, but also to scientists in other fields and to people from industry.

Over 5,000 persons attended this conference, but only 2,300 of them can be considered as principal members, including 60 academicians and corresponding members of the Academies of Sciences USSR and of other Union republics, 407 doctors and professors, 955 candidates of sciences, dotsents and senior scientific coworkers, also 878 engineers, instructors and junior scientific coworkers.

The conference was represented by persons from the Russian Federation (approximately 1,700 participants), the Ukrainian SSR (329), the Belorussian SSR (16), the Transcaucasian republics (86), the Central Asiatic republics (54), and the Baltic republics (51). In addition, 60 scientists from Bulgaria, Great Britain, Holland, Israel, Poland, Rumania, USA, France, West Germany, and Czechoslovakia took an active part in the conference, thus adding an international flavor to it.

The papers were presented in three sections and 18 subsections. Of the 560 papers presented at the conference, 128 papers were presented in the Section of General and Applied Mechanics, 223 papers in the Section of Fluid Mechanics, and 209 papers in the Section of the Mechanics of Solids; 134 papers were of a survey nature and 26 papers were presented by foreign scientists. Many scientists from the Moscow State University presented papers and participated in the work of the Organizing Committee.

Round-table discussions were conducted at the conference on the following topics: a) interesting problems and methods in the theory of hydroaerodynamics; b) stability of plates and shells; c) creep stability; d) particular problems of the theory of elasticity; e) physical models and equations for describing soil conditions. Particularly interesting and fruitful discussions were held on problems of theoretical hydroaerodynamics.

At the plenary meeting Academician L. I. Sedov presented a paper "Galileo Galilei and the Foundations of Mechanics" dedicated to the four hundredth anniversary of the birth of the great Italian scientist. M. V. Keldysh, the President of the Academy of Sciences USSR, defined the problems of modern mechanics in his welcoming speech. In his introductory speech, Academician N. I. Muskhelishvili summarized the contributions made to mechanics during the four years following the First All-Union Conference and new trends in its further development.

The conference summarized the contributions made to mechanics, defined the most important problems, and established the lines of scientific activity for the development of all branches of mechanics, in the first instance, those areas which are of primary importance to the conquest and exploitation of space and to the development of the national economy. Many important problems were posed which require the closest cooperation of mechanics with physics, chemistry, and other sciences. It is the task of general mechanics to develop general theory, establish effective methods for studying the stability of motion and nonlinear oscillations in mechanical systems, achieve further development of the theory of ballistics and of automatic control systems, and to work out methods for solving equations in mechanics, taking account of new forces and new constraints.

For the last few years, substantial progress has been made in all branches of fluid mechanics. Modern hydroaeromechanics is still faced with unsolved problems: detection and study of entirely new phenomena and of physical and chemical processes connected with them, investigation of the flight of bodies at high supersonic velocities, problems in magnetogasdynamics, development of methods for solving problems in nonlinear three-dimensional unsteady motion, the motion of viscous liquids and gas-liquid mixtures, and study of phenomena accompanying blasts in compressible media.

The most important problems in the mechanics of solids appear to be the development of the general theory of elastic-plastic deformation, the determination of relations between physico-chemical processes taking place in a body during deformation and its mechanical properties, the development of the theory of the strength of materials under prolonged and complex loadings and of the theory of fatigue and vibratory strength of materials under significant variations of temperature. The most important result of the conference was the exchange of experience and of opinions between the participants concerning the state of research in all branches of mechanics.

The participants of the conference expressed their wish to publish the survey papers presented at the conference; it was decided to convoke another conference in four years and to hold meetings and conferences on particular branches of mechanics in the period between these two conferences.

The Second All-Union Conference on Theoretical and Applied Mechanics is a very important event in our science because it provided new guide lines to the further studies of scientists. Soviet scientists working in the field of mechanics consider their achievements and their activities as participation in meeting objectives in building the foundations of a Communist society. All efforts of Soviet scientists are directed toward the realization of these important objectives.

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